## APPENDIX III

**Performance Characteristics of Revised Plans.**—The "2-step" plan described in *Recent Revisions* can be defined as follows:

Compute the arithmetic mean, $\bar{x}$, of the 10 sample values and accept the lot if the following conditions hold: $(A)$ $0.95\ \mu_o < \bar{x} < 1.05\ \mu_o$, and $(B)$ $|x_i - x| < 0.07\ x$ for at least 8 of the 10 samples values, $x_i$.

In the notation of the previous section, the probability that condition $(A)$ holds is simply $P_A(\mu, \sigma)$, as given in Eq. 1. The probability, $P_B(\mu, \sigma)$ that condition $(B)$ holds can be approximated by assuming that $x_i - \bar{x}$ and $x_j - \bar{x}$ are statistically independent when $i \neq j$. Letting $h = P_r\ [|x_i - \bar{x}_1| < 0.07\ \bar{x}]$ we obtain for $P_B$ the binomial type expression

$$P_B(\mu, \sigma) = \sum_{r=8}^{10} \binom{10}{r} h^r (1-h)^{10-r}$$

where $h = 2F(0.0738\ \mu/\sigma) - 1$.

The value in Table I corresponding to a particular normal distribution was obtained by first computing $\mu$, $\sigma$, $P_A(\mu, \sigma)$, $P_B(\mu, \sigma)$, and then approximating the probability of acceptance for the revised plan as $P'_A(\mu, \sigma) = P_A(\mu, \sigma)\, P_B(\mu, \sigma)$.

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# Notes

## The Occurrence of *iso*Pelletierine in *Withania somnifera*

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INVESTIGATION of the root alkaloids of *Withania somnifera* Dunal has resulted in the delineation of the alkaloid complex by paper partition chromatography (1), the isolation of tropine and pseudotropine (2), and the isolation and characterization of a new alkaloid, anaferine (3). Compound VII of the chromatogram, cited above, is *dl-iso*pelletierine. The occurrence of this alkaloid in the *Solanaceae* was first reported (4) for the leaves of *Duboisia myoporoides* R. Br.; the previously acknowledged occurrence being the root of *Punica granatum* L., family *Punicaceae*. This finding amplifies the known biochemical heterogeneity of the *Solanaceae* and extends a lysine related alkaloid to yet another genus in the plant kingdom.

### EXPERIMENTAL [1]

The alkaloid was isolated from an ethanol extract of the defatted granulated root (81 Kg.). The concentrated extract diluted with water and adjusted to pH 4.7 was adsorbed on a column of Amberlite IRC-50-Na resin and was eluted by a gradient acid-buffer method. The fraction containing *iso*pelletierine hydrochloride was further purified by chromatography on acid alumina (Woelm, grade 1) using ethyl acetate as the eluent. The alkaloid salt (5.67 Gm.) was recrystallized from ethyl acetate.

***iso*Pelletierine Hydrochloride.**—The infrared spectrum was identical to that of a synthetic sample[2] and a natural sample;[3] m.p. 145°, undepressed in admixture with each of the above samples; $[\alpha]_D^{2.5} = 0.00$ (0.21% in ethanol).

*Anal.*—Calcd. for $C_8H_{16}ClN$: C, 54.07; H, 9.07; Cl, 19.95; N, 7.88. Found: C, 54.38; H, 9.59; Cl, 20.21; N, 7.67.

***iso*Pelletierine Picrate.**—The compound was prepared from the hydrochloride and was crystallized from ethanol; m.p. 148.5 to 149.5°, reported 149–150°. The melting point of a mixture with the picrate of an authentic sample[2] was undepressed.

***iso*Pelletierine 2,4-Dinitrophenylhydrazone Hydrochloride.**—The compound was prepared from the hydrochloride and was crystallized from ethanol-ethyl acetate; m.p. 240–241.5° (decompn.), lit. 242°.

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[1] Analysis by Geller Microanalytical Laboratories, Bardonia, N. Y. All melting points are corrected. Infrared spectra were determined in KBr pellets, using a Perkin-Elmer model 21 spectrophotometer.

[2] Supplied by Prof. J. B. Wibaut and Prof. H. O. Huisman, Holland.

[3] Supplied by Dr. P. I. Mortimer and Dr. J. W. Clark-Lewis, Australia.